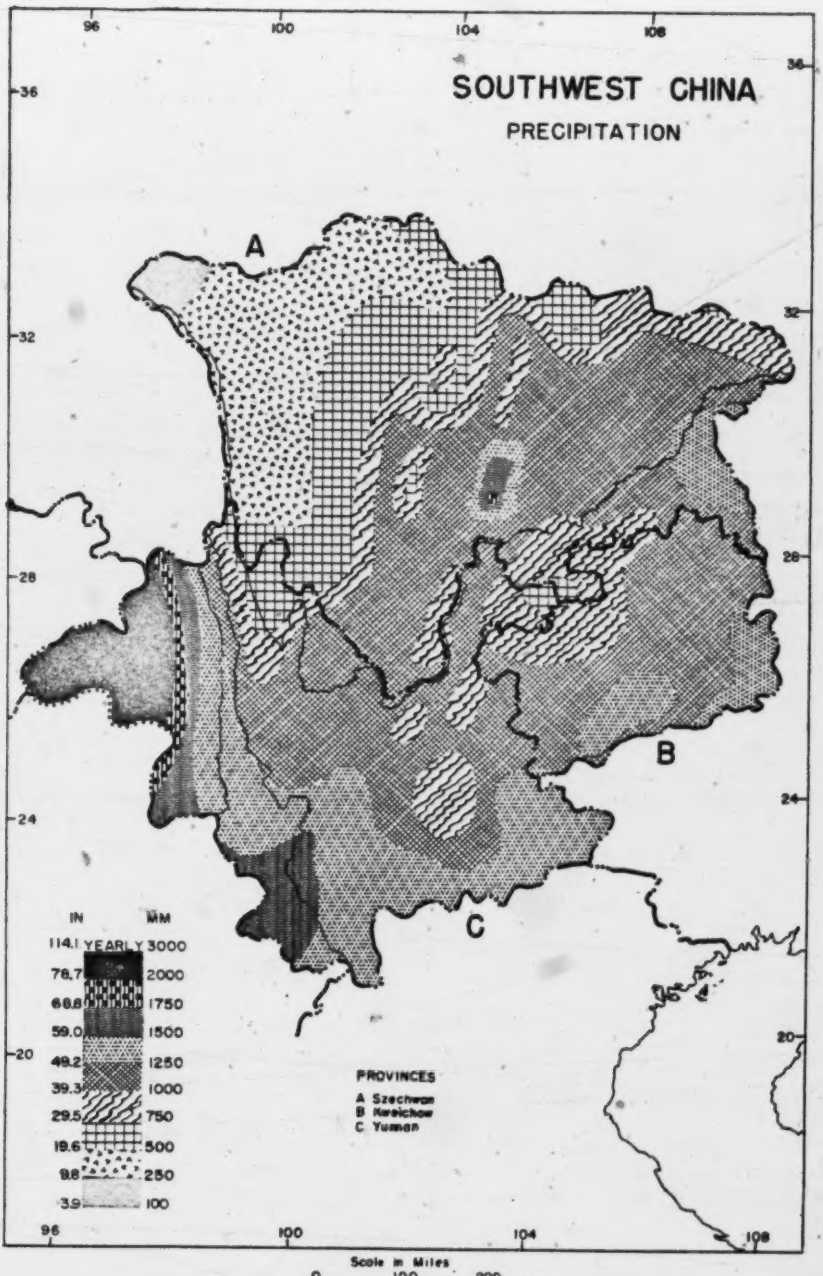
1:Stanford U. S-4, 5 1956 AF16 SW China AF16

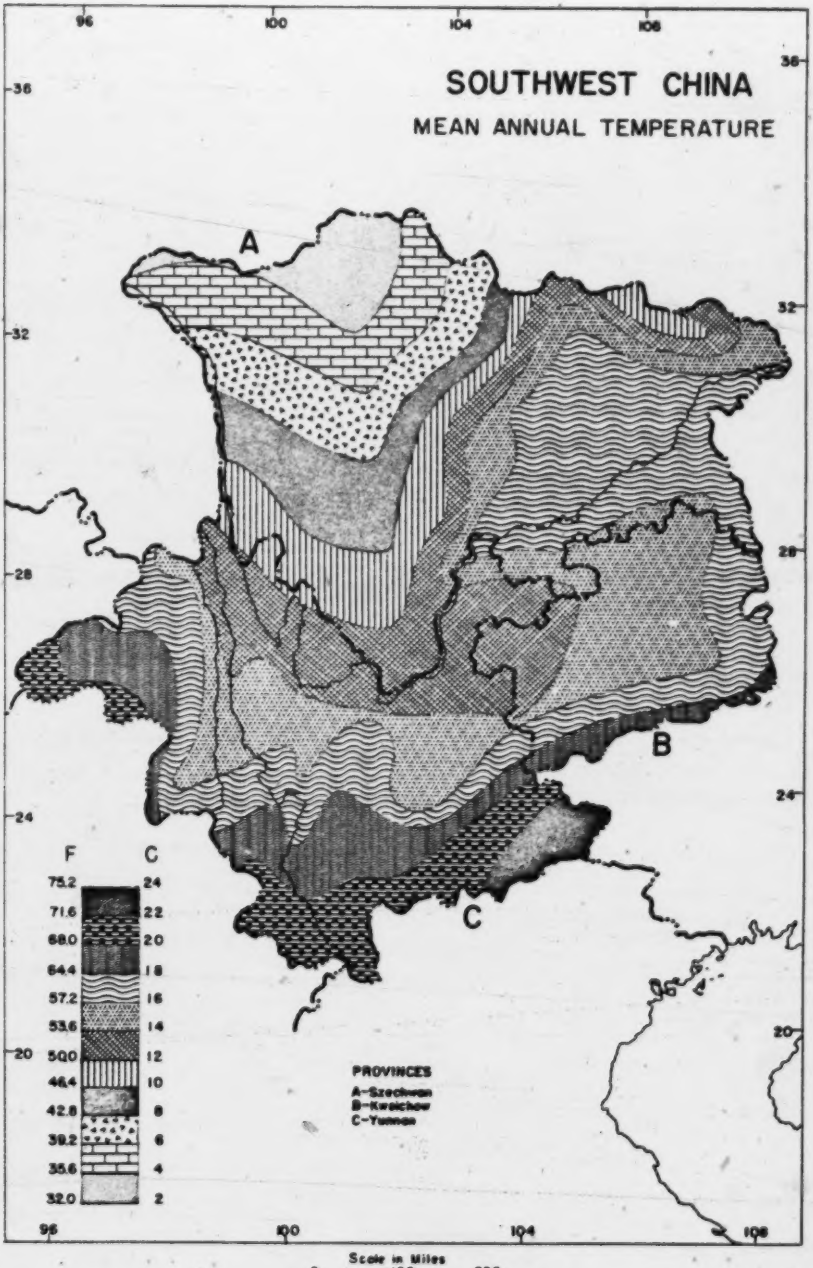
● 132



[facing p. 1(b)]

1:Stanford U. S-4, 5 1956 AF16 SW China AF16

132



[facing p. 1 (c)]

1:Stanford U. S-4, 5 1956 AF16 SW China AF16

the riparian "rice-bowl" section of Hunan Province to the east. The Chung-pa Plain, northeast of Chengtu in the same province, is another extensive flatland. Outside the basin, the plains are scattered and consist of high valleys between towering mountains or "grasslands" on the Tibet-Sikang highland. The expansive valley around Kweiyang, provincial capital of Kweichow, for example, is about 1,000 meters (3,200 ft.) above sea level. Similar in nature is the Kunming plain, except that it rises to a height of 2,000 meters (6,400 ft.). Farther north are the flat stretches around Pa-an (or Pa-t'ang) on the former Ch'ang-tu--Sikang border, which is an open section of the Golden Sand River valley, rising 2,600-3,000 meters (8,360-9,600 ft.).[7] Many small lakes are found in these plains. The Szechwan Basin, with its lattice work of waterways, is without lakes, but Yunnan, Kweichow, and the former Sikang Province have many. Ts'ao-hai Lake in Kweichow and Erh-hai and T'ien-ch'ih lakes in Yunnan, are noted bodies of water. Warm springs also abound in these two provinces.

C. Climate

The climatic zones in this region are best

7. Ibid., pp. 9-11.

described in terms of relative elevation. This is especially true in western Szechwan, where warmer climatic conditions are noted in the valleys below 1,500 meters (4,800 ft.), and the few rare land depressions about 900 meters (2,880 ft.) show semitropical characteristics. Places averaging 3,000 meters (9,600 ft.) in elevation are cool, and no warm season can be observed at 4,800 meters (15,360 ft.) and above.[8]

On the highland wind and rain come in their own peculiar manner. During the day the wind blows down the valley but reverses its direction at dusk. Hailstorms frequently accompany the wind.[9] Flat grasslands offer no shelter when howling gusts strike with resounding violence. Travelers, who must camp in the open because few villages are within a day's walking distance of each other, find that it is an ordeal to keep their tents from being snatched away. Winds usually start in mid-morning and rapidly gain in velocity after the noon hour, making it most unpleasant for travelers who must fight the wind and breathe the thin air at altitudes of 6,000-7,000 meters (19,200-22,400 ft.).

The heaviest annual rainfall of 1,790 millimeters (70 in.) is recorded in the lower

8. Ibid., pp. 30-36.

9. Fang Te, Sui-chün Ju Tsang Chi [Entering Tibet with the Army], Peking, Kung-jen ch'u-pan-she, 1953, p. 41.

•/32 Ya-lung River valley, with the greatest amount falling during June-September. North of the Ya-lung River the precipitation decreases; it reaches 300 millimeters (about 12 in.) in the high northwestern grasslands.[10]

In southwestern Yunnan the V-shaped river valleys become more pronounced, and in some places it is over two miles from the top of the mountain to the bottom of the valley. Near the bottoms of these valleys the climate is tropical. Wind rarely visits the surface of the rivers, leaving the air there stagnant and sultry; bacteria and disease carriers thrive.[11] Central and eastern Yunnan areas enjoy moderate weather all year long. The entire province of Kweichow is in the temperate zone; snow is rarely seen in winter except on high mountain peaks, and even the hottest summer days allow the comfort of cool mornings and evenings. Rain in this zone averages between 1,000 and 1,500 millimeters (39-58 in.) a year, the greatest amount falling in summer. The almost perpetually blue skies of Yunnan are in sharp contrast to the dull skies of Kweichow which are so often hidden under a grey overcast.

The Szechwan Basin is well known for its

---

10. Cressey, op. cit., p. 384.
11. Chiang Chün-chang, op. cit., pp. 30-36.

132 fog which blankets the entire area from October through April. As soon as the fog lifts, it is summer. Warm days, with temperatures around 26° C (78° F), continue for five months. Sufficient rainfall (about 1,000-1,800 mm. or 39-70 in.) throughout the year makes the basin well suited for farming.

1: Stanford U. S-4, 5 1956 AF16 SW China AF16

Table 1. Climate at Selected Localities*

Locality	Average Temperature (F) January	July	Rainfall (inches) Annual Average	Rainy Season
Kung-ko (on border between Yunnan and former Sikang)	24	64	42	June-July
K'ang-ting (in central-east of former Sikang)	30	69	75	June-July
Sung-p'an (northwestern Szechwan)	27	60	35	July
Chengtu (on Szechwan Plain)	45	78	55	July-August

Table 1. (continued)

Kunming (lake region of Yunnan)	48	73	42	July-August
T'eng-ch'ung (western Yunnan)	27	69	59	June-August
Kweiyang (central Kweichow)	37	72	48	September-October

* Based on Chung-hua Jen-min Kung-ho-kuo Fen-sheng Ti-t'u [Atlas of the People's Republic of China by Provinces], Shanghai, Ti-t'u ch'u-pan-she, 1953, Ko Sui-ch'eng, op. cit., chap IV, p. 102, chap. III, p. 241; Cressey, op. cit., pp. 76-79; Mei Hsin-ju, Hsi-k'ang [Sikang], Nanking, Cheng-chung shu-chü, 1939, p. 10.

1: Stanford U. S-4, 5 1956 AF16 SW China AF16

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

rising to over 20,000 feet into an azure sky, while Ha-ba ndshĕr nv-lv rears its snowy head high over the crags and pinnacles forming the last of the spur to the west, at the foot of which the Yangtze roars some 10,000 feet or more below, ever carving a deeper and deeper gorge. Range upon range is visible, as well as the Yangtze in its trench at Ta-ku after it emerges from the gorge between Ha-ba ndshĕr nv-lv and the crags of 'A-ts'an-gko. 133* 137* 487*

From 15,500 feet on, the grade is gentle and the going is good. We continue on the top of the wide spur leading to the broad peak, over thousands of tiny, loose, sharp limestone rocks. The entire surface of the hard limestone has been split into myriads of fragments by the action of the ice. The wall of rock which forms the eastern part of the gorge is cleaved several feet deep into a forest of columns as if the entire surface had been chopped up with a giant's axe. From the summit down to 17,000 feet the broad spur is buried beneath a massive glacier, the ice lying in folds like the train of a wedding garment (PLATE 87). The rocks here change in shape, resembling angular sticks several feet in length, and only about two inches in width. They lie about parallel to each other, having been split by the action of severe frosts and ice. Quartz is not uncommon here, also iron-bearing rock and pure white marble. The ascent to the summit of this mountain can easily be accomplished, one needs only follow the western outer edge or rampart which hems in the glacier, and which is usually free of snow. The only obstacles are the terrific gales which blow over these mountains, whirling the snow in huge columns like smoke into the air. If one wishes to ascend Gyi-nà nv-lv, camp should be pitched in the gorge west of it, on a broad shelf or terrace, suitable for a camp, a little below 16,000 feet. At 14,500 feet and even higher we found *Lerwa Lerwa major* on the rocky, barren waste and also several snow chickens, *Tetragallus tibetanus henrici*, neither hitherto recorded from Yün-nan.

6. THE REGION BETWEEN TA-KU (NDA-GV) AND GKO-NDZA-GKV

Ta-ku and the many small villages belonging to it are collectively called Ta-chü li 大具里. Ta-ku itself is situated on a fan-shaped plain mainly composed of conglomerate. To the west the plain is bordered by the Gyi-nà nv-lv and the Chien-t'ai Ho 漸台河. The Yangtze emerges here from the terrific gorge which it has cut for itself through the Li-chiang snow range, and flows east for a short distance through the conglomerate plain and then north at the foot of a mighty range — the Dzu-k'u nv-lv as it is called by the Na-khi of Ha-ba and Bbĕr-ddĕr. The plain through which the Yangtze flows, 600 feet below the main village of Ta-ku, drops in terraces towards the river. It is entirely inhabited by Na-khi, except for a few Chinese settlers. The climate is warm enough for two crops to mature in one year. Wheat, panicled millet (*shu* 黍), cotton, rice and maize are grown. Out of the millet stalks they make sugar known as Sha-t'ang 粉糖. *Cannabis sativa*, the *ma* 麻 (hemp plant) which the Na-khi call *ssaw*, is much cultivated, especially the female plant which gives better fibre and which they call *ssaw-mă*. 133* [132] 241

Ta-ku is 140 li north of Li-chiang. To the west of the village is a large spring called Lung-ch'üan 龍泉 (Dragon spring); in the days of a native official, its water was conveyed in irrigation ditches to the higher fields. Near the [132] 133* 137*

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

Salween into Tsha-rong in south-east Tibet, where the village of Sang-tha (Sung-ta 松打 in Chinese), is still inhabited by Nu-tzu.

The territory in its inhabitable portion, lies in the valleys of the Mekong, Yangtze, Yung-ch'un Ho and the smaller tributaries of the Yangtze and the Mekong. The remainder is composed of the many mountain ranges separating these valleys; they reach their greatest height, 21,000–22,000 feet, to the west of the Mekong, where they form the Yün-nan — Tibet border. As we go northward the altitude increases, from Shih-ku on the Yangtze, at 6,200 feet, to Te-ch'in (A-tun-tzu) at 11,500 feet, one of the highest inhabited places in the north of Yün-nan. We have here a rise of 5,300 feet in a distance of 1,100 li (330 miles), 17 stages from Shih-ku.

The high mountain ranges which separate the Salween, Mekong and Yangtze — to mention the three longest rivers only — all reach their greatest height at about the same latitude (28° 20′); they act as rain screens, collecting the monsoon clouds which sweep across from the Assam plateau and assure a plentiful rainfall. To the north of the mighty snow peaks the land is parched and arid, a rocky waste. A rope could be stretched between the rain belt and the arid zone, so close do they adjoin each other. Looking south from above Yang-tsa 羊咱 the Mekong valley is filled with clouds, mist and rain, while a turquoise-blue sky extends from horizon to horizon in the north. South of Yang-tsa are vast forests, carpeted with moss, north a parched, rocky wilderness. The heaviest rainfall, as well as the first snow, is caught by the Salween-Irrawadi divide (Nam-ch'iu or Ch'iu Chiang 泸江 watershed). Next comes the Mekong-Salween divide, called the Kha-wa-kar-po Range (Chinese, Ssu-mang Ta-hsüeh-shan 四蟒大雪山), 21,000–22,000 feet in height and distant only 36 li from the Salween as the crow flies. While both these ranges and their passes are covered with snow by October, the Mekong-Yangtze divide, which reaches its highest point in Pai-mang Shan, about 20,000 feet in height, is still free of snow in December, and several species of Gentians enjoy a glorious sunshine and blue sky. Thus do the western ranges gather all the moisture.

The three mighty rivers, which all have their sources on the high plateau of Tibet, flow parallel in deep trenches from north to south, hemmed in by huge snow ranges. It is only 50 miles from the Yangtze to the Salween as the crow flies, but undertake the journey and it will occupy a fortnight. Their valleys vary greatly in depth, the deepest part of the Mekong valley at the latitude of A-tun-tzu being 10,000–12,000 feet. With the exception of the Salween, the climate of this region is healthy, although malaria is common in the rain-belt of the Mekong.

To reach this region is an arduous undertaking, for it is about the most isolated in Asia. Sinkiang is certainly farther away, yet motor cars and aeroplanes bring it close to civilization. But here perhaps never will the sound of a motor horn be heard, for to construct a road over such mountains and deep gorges is a prohibitive undertaking. And planes? Let it be said that there is not even level space enough to pitch a tent, much less accommodate an aeroplane.

Thus it will remain one of the last regions to be brought close to civilization. Its scenery is unsurpassed and awaits the lover of nature, but he must pay the price.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

nese. He was the descendant of a military officer placed there by the ancient Na-khi chiefs to rule the district.[25] His son has now succeeded him. His power extends to the Ch'iu Chiang 沐江, whence the Ch'iu-tzu 沐子 tribe pay him tribute-taxes in kind.[26] The *Yün-nan T'ung-chih* mentions as first ancestor a certain Wang Lien 王連 who ruled as sergeant at K'ang-p'u, (see page 296); the Wang family apparently moved to Yeh-chih later.

Following along the sandy stream-bed on the edge of the fields for about two li, we reach the hamlet of Yeh-chih. The T'u-ssu has a very spacious mansion and was a very hospitable host, and a friend of the foreigner. Mr. George Forrest, the English botanist, owed his life to him when he was pursued by the lamas of A-tun-tzu and other lamaseries in 1905, and even saw the venerable Père Dubernard murdered in cold blood at Tz'u-ku, where the Catholic mission used to be. At the time of my visit in 1923 the T'u-ssu was 65 years of age. In the rear of his yamen is a private chapel, where a lama prays and beats the drum and blows his conchshell for the spiritual benefit of the T'u-ssu and his household.

East of Yeh-chih is a peculiar mountain range, purple in color and much eroded. It is the Pai-ngai Shan 白崖山 (White cliff Mountain) which extends from north of Yeh-chih to below K'ang-p'u. To the west of Yeh-chih, forming the Mekong — Salween divide, is the Nu Shan 怒山, which extends from north of Yeh-chih to south of Wei-hsi. The southern part of this mountain, back of the hamlet of Fu-ch'uan 富川, on the west bank of the Mekong, is known as Fu-ch'uan Shan. North of Fu-ch'uan is the hamlet of Ch'i-p'u 其普. The Fu-ch'uan Shan is a wonderful botanical collecting ground, as is the entire Mekong — Salween divide in Yün-nan and Tibet. It is south of the Wei-hsi district border.

The climate of Yeh-chih is warm, but in the three winter months all the surrounding mountains are covered with snow, which even in the spring does not melt. In September heavy frosts begin, but the climate of Ch'i-tsung, La-p'u, is much hotter in the summertime.

[25] PÈRE F. GORÉ in his *Notes sur les Marches Tibétaines*, Hanoi, 1923, p. 47, calls him Nou Koua, chief of the Nou or Lou-tseu. This is, however, erroneous, for Mun-kwua is a Na-khi term meaning "Soldier Governor." There were only two Mun-kwua, one at Yeh-chih, the other at O-yü on the Zho Chhu and they were the highest-ranking officials after the chief at Li-chiang.

[26] The father of the late Mun-kwua was a great friend of the conqueror of the Ta-li Mohammedans, the famous Yang Yü-k'o 楊玉科. He was assassinated in 1871 while carrying out the latter's orders to subjugate the Hung-p'o 紅坡 Lamasery, one stage south of A-tun-tzu. Although the Chinese revenged his death, it was not sufficient for the new Mun-kwua, the son of the victim, for he called out 2,000 Li-su who, prior to marching forth, drank fresh bull's blood, swearing vengeance. They brought destruction to all the villages controlled by the Hung-p'o lamas to within sight of the village of Tz'u-ku 茨牧, but spared the Christians and the Catholic missions. They drove off the flocks of the peasants and the latter they carried off into slavery.

All foreigners who passed through Yeh-chih have only kind words and praise for the Mun-kwua. T. T. COOPER, who travelled through his territory in 1868 when Ta-li was in the hands of the Moslems, and when his way south was barred, enjoyed the hospitality of the father of the late Mun-kwua Wang Tsan-ch'en, and has the highest praise for him and his relatives. Even the Catholic priests, when expelled from Tz'u-ku, found refuge with the Mun-kwua, who was their friend.

8: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

527 of a buffalo round the principal streets of the town for two or three hours. Inside the buffalo and the man are twelve little buffaloes and twelve little men, or should the year contain thirteen months, as it sometimes does, there are thirteen of them. The next day the two images are broken, and the little buffaloes and little men are taken out and one of each is presented to the principal officials and other leading men of the place, who have to make a money present in return. This ceremony appears to be a representation of the birth of the New Year. The particular colour that the man and the buffalo are to be painted each year is communicated officially from Peking.

132 The amount of snow to be found on the Ta-li mountains is a subject on which former travellers have differed, so I made enquiries about it. Mr Smith told me that the snow on the range is only visible from below during the winter months, but that in the deep ravines and crevices near the top of the range it is to be found all the year round, and it is brought down and sold in the town to cool water with in the hot weather. A little snow occasionally falls in the Ta-li plain, but it never lies long.

downhill passing a most remarkable temple, called Ch'a-fang-ssŭ, built on a ledge in a precipitous rock which rises sheer some 300 feet.

During this descent the Yang-pi River is seen on the left hand running most unexpectedly in a north-easterly direction. It makes a very sharp bend in this part of its course and afterwards again comes round into its original southerly direction. The Yang-pi is at the ferry 130 yards wide, with a moderate current, but a little lower down it gets squeezed in between the hills again, and becomes narrower, deeper, and more rapid. It is crossed by a rather shaky bamboo raft, and a few hundred yards of steep ascent brings one to Hsin-niu-kai, where there is a dilapidated official rest-house.

The people of this village are Chinese, not Lo-los, and from here on to Shun-ning the inhabitants are principally Chinamen. The height of the Yang-pi here is 3,900 feet, a fall of more than 1,200 feet from where we had last crossed it on the Yung-ch'ang-Ta-li road. The climate at this low elevation is much warmer than most places in this part of the country and the opium crop was nearly ripe, whereas at Ta-li and other higher lying plains it was only just showing above the ground.

The river in this part of its course is not known to the Chinese as the Yang-pi Ho. The people here seem to have no name for it but call it vaguely the Ta Ho or Big River. In fact the Chinese very seldom give names to their rivers, but call them after the nearest town or important village through which they pass. Nearly all rivers thus have different names in different parts of their course. This according to our ideas of geography is extremely inconvenient, so I have thought it best to adhere to the name of Yang-pi River.

I had had scarcely any shooting so far, but on this march I first had an unsuccessful stalk after two barking deer, and afterwards shot a hen pheasant (*Phasianus elegans*), one of nine or ten that got up.

On the 11th we had an uphill road, climbing the Ta-chin Shan, a hill with a conspicuous pagoda on its summit. We left this pagoda on our left hand and followed a narrow path cut out of an almost precipitous hill-side to the village

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

000 find the exact time at the moment of the mean of all the taps. The difference between the mean of the times of sending the taps and the mean of the times of receiving them would, when corrected for the error of the watches, give the difference of time, and therefore the difference of longitude.

Subsequently, in this and the following winter, we took the longitudes of several other towns and by thus getting a few fixed points have I hope added materially to the accuracy of the map of Yün-nan.

• 132 The climate of T'êng-yüeh at this time of year we found extremely pleasant. It froze every night and was quite cold all day. Should a railway ever be made from Bhamo, it would be easy to find an excellent sanatorium for the people of Burma in the neighbourhood of T'êng-yüeh.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

719 The nominal head of the arsenal was also in charge of the Yün-nan telegraphs. He was a stout, pleasant old Manchu gentleman, who did not pretend to know anything whatever about either telegraphs or arsenals.

132 The weather since we left Ch'u-hsiung had been getting a little warm, but in Yün-nan Fu we had quite a change. A heavy thunderstorm ended in a fall of snow, which lay on the ground two inches deep for some hours. The height of Yün-nan Fu I made 6,700 feet, and its climate is never hot, 85° in the shade being about the maximum summer temperature. There are frosts in winter, but no very severe weather is ever experienced.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

312 here asked us to show them where to dig for water. The Chinese often credited us with the power of seeing what is under the earth. I suppose the idea is derived from embroidered narratives of the exploits of mining engineers.

The next march, over a dry, hilly country, brought us to Yao-chan, where we halted for a day as Watts-Jones had to go up a hill to the east to get a better idea of the 316 lie of the country. I took the opportunity to go up another hill to the west to do some surveying, and to visit a copper mine about two miles off.

This mine, they say, was formerly very productive and 2000 men are said to have found employment here. At the time of my visit there were not more than 100 miners at work. They live in little huts scattered about the valley, and there are three furnaces constantly kept burning to smelt the ore they dig out. The ore is mined out of the solid rock of which the hill is formed. There are no deep shafts: they cut caves out of the hillside, and the miners often live in the caves they are working in. They use hammers and iron wedges, and they say a man can get out a mule load of ore in two days. The ore varies a good deal in quality, and is sold for from two to seven mace a mule load. Taking a load as 130 lbs., this comes to from sixpence to one and ninepence for 100 lbs. The best ore is of a purple colour and is said to produce 10 per cent. of copper.

The lessee of the mine pays 500 or 600 taels a year to the Government for the right of smelting, and the miners are obliged to sell the ore to the lessee. The copper produced is sent to Kuei-yang Fu, the capital of Kuei-chou province, and is there used for coining into cash.

• 132 The hill-tops in this part of the country rise to about 8000 feet, and they all had snow on them, which, combined with a biting north wind, made this one of the coldest days I have ever felt in western China.

361 On the 21st April we crossed a range, and skirting the edge of a large lake reached Wei-ning Chou, which is built on its further shore. The walls enclose a large space, but it is chiefly filled with temples, including a very large red Confucian temple. There are not more than 600 houses in the place, half within the walls and half without.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

361 It is a very poor town with really nothing to call a
438 plain, and all the rice has to be imported from Chao-t'ung Fu and elsewhere. Maize and beans are the principal food of the inhabitants. There are no large merchants here and very little trade is done except in the necessaries of life. Cotton cloth and any foreign goods that there are come from the Yangtze, and salt also comes from Ssŭ-ch'uan.

316 The only importance of the Wei-ning district lies in the mines—copper, silver, lead, iron, and zinc. With good communications these could no doubt be profitably worked. The height of Wei-ning is 7,500 feet, and it is a very cold place.

132 As Pottinger had not yet arrived I went on the next day along the Pi-chieh road, while Watts-Jones did some more surveying to the east of Wei-ning.

Going gradually up a range of hills, my road led me over a series of small steep-sided plateaus, with no outlet for the water. I slept at Ssŭ-p'u at 8000 feet. For the last few miles of this march we were in a dense cloud, so that it was impossible to do any surveying beyond a mere traverse of the road. This is the sort of weather which is, I believe, prevalent throughout Ssŭ-ch'uan in the cold season. The name Yün-nan means "south of the cloud," and it is natural to suppose that the province was so named as lying south of the clouds and mist which prevail in Ssŭ-ch'uan, and even in north-eastern Yün-nan, for such a great part of the year.

On the 23rd April I met Pottinger at the little village of Hun-shui-t'ang. Hunter, who was doing the surveying, was still 30 miles behind, as he had found great difficulties in this part of the line. So we decided to go to Wei-ning and await his arrival there.

The misty and rainy weather had made surveying most difficult for Pottinger's party. They had sometimes been for days together enveloped in thick fog, which made it absolutely impossible to see the lie of the country or to do any useful work.

579 Besides this they had encountered much hostility from
186 the natives of the country. A hundred men or so would collect and roll down stones on them from the hill-tops

316 Like Wei-ning

the chief importance of Tung-ch'uan lies in its mines. I had not time to visit any of these, except those at Kung-shan, but there are several productive copper mines in the district.

• 132 The height of the town I made 7,250 feet. It is a cold place, with a climate more cloudy and rainy than the parts of Yün-nan lying further to the south or west of it.

000 My route from here on to Yün-nan Fu took me along the main road which connects the Yangtze at Sui Fu with the capital of Yün-nan. I was here again out of unexplored country, as Doudart de Lagrée, Baber and others, not to mention many missionaries, had travelled the road before me. I still kept up the survey as no very satisfactory maps had been made of this country.

Turning off from the Tung-ch'uan plain near its western end, our road led us up the Yi-li Ho by a narrow valley 505 with hills rising to 9000 feet on either side. This river is 30 or 40 yards wide and is fordable in many places, but is deep enough to be navigated by boats which bring down timber and firewood to supply Tung-ch'uan.

000 Up this valley we marched for two days and then ascended very steeply on to a ridge and along it, the highest point reached being 9,300 feet. To the north-west a long distance off two very high peaks were visible which I estimated at 14,000 feet. We had now got on to a bare plateau country with considerable stretches of flat ground and small hills rising 300 to 500 feet out of it. We slept on the 5th May in the large temple of the village of Lai-t'ou-p'o at 8,500 feet.

241 The next day we continued our march over the same plateau country. Villages are scarce here, and there is very little cultivation owing to lack of water. At the end of this march of 18 miles the road descends to Hsiao-lung-t'an which is near a small tributary of the Yangtze.

On the 7th after descending to Kung-shan, our road led us up a narrow cultivated valley, ending with a slight ascent 137 to Liu-shu-ho. The country here is more wooded: the hills are covered with firs, and I pitched my tent in a grove of chestnut trees.

407 I saw a curious rice husking machine here. It consisted of a wheel in an upright position which wheeled round and

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

000 The next day, the 24th, we crossed the watershed between the Mekong and the Black River at 7,500 feet, and on Christmas Day reached Hsin-fu. The village contains only 30 houses, and is built on the Pa-pien Ho, a river 50 yards wide, which is the upper part of the Black River of Tong-king.

753 The height of Hsin-fu is only 3,400 feet, and the whole of this part of the Black River valley has a bad reputation 764 for unhealthiness. The Hsün-chien, the small official who is in charge of the district, had just died and was in his coffin in the room of the temple I was sleeping in, awaiting removal to his native place for burial.

132 Certainly I did not find the Black River valley a pleasant climate even at this time of year. At night the thermometer would go down to 40°, and there would be a nasty cold mist till the sun broke through about ten o'clock, when it would become decidedly hot. But in justice to this valley I should mention that Turner and Ker were travelling in it for some days in the height of the rainy season, and that none of their party, which included several Chinamen, suffered at all from fever. So healthy are the great part of the uplands of Yün-nan, that the Chinese of that province are apt to condemn as unfit to live in any place where it is possible to get fever.

000 For two days from Hsin-fu we followed down the Pa-pien valley, but keeping generally some way off the actual river. An uninteresting country, very thinly populated by Chinese and K'a-tus. Later on in March and April there is a good deal of traffic in P'u-êrh tea along this road, but at this time of year there is no trade except in salt carried by men on foot from Mo-hei, near P'u-êrh.

317 Leaving the Pa-pien valley altogether on the 28th, we turned more westward and the next day reached Mo-hei, a large village with an important salt well which supplies a very large part of southern Yün-nan.

Here our route joined the main road from Yün-nan Fu to P'u-êrh Fu, and the next day, crossing a range at just over 6000 feet, we dropped down into the P'u-êrh plain.

206 The only apparent change in P'u-êrh since I was there five years before was the establishment of a telegraph 000 office. In the evening I spent several hours at the office

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16
Pai-i AE7

S
291 of about a foot, hanging down over their necks just after
563 the fashion of the Kachin girls of the Burmese frontier. The K'a-tu women are distinguished from the other two tribes by wearing trousers, and by little metal ornaments which hang down from the front of their turbans. These three tribes are known to the Chinese by the name of Wo-ni.

000 From T'a-lang the main road to the capital crosses the Red River at Yuän-chiang Chou and passes through Hsi-o and Hsin-hsing, but this route had been taken by Turner and Ker the previous year. To avoid known ground I took a road through Hsin-p'ing Hsien to Yi-mên-Hsien, passing through a piece of country quite blank on the maps.

S
563 Our route led us in a northerly direction over the usual mountainous country, and on the second day we crossed the watershed of the Black River and Red River at 7,500 feet. Our camp that night was at Ma-lu-t'ang, a village inhabited by genuine Lo-los, not Wo-nis. They say they migrated here from the Ch'u-hsiung-Fu district three generations ago. Besides Lo-los there are Wo-nis in this part of the country, and also two other tribes, K'u-tsung[1] and Lo-pi, of whom I have never heard in other districts. S I believe them to be connected with the Wo-ni race.

• 132 We had been experiencing quite warm weather lately, and this hot climate seems to be a peculiarity of the Black River basin, for the morning at Ma-lu-t'ang, which lies on the Red River side of the watershed, was cold and frosty. In two more days we reached the Red River at Mo-sha. It is from 70 to 100 yards wide, flowing through bare reddish coloured hills, but just here passing through a S plain four miles wide.

P • This Mo-sha plain is at a level of only 1,650 feet, the
291 lowest I have ever been in Yün-nan, except on the very borders of Burma or Tong-king. It is inhabited by Shans, who have however no sawbwa of their own. The women have a very peculiar dress, quite different to that of any Shans I have seen elsewhere. Their blue jackets have red cuffs, and they wear a red band of cloth round the waist. Both jacket and petticoat are much ornamented round the

[1] Not to be confused with Ku-tsung, a name the Chinese of Yün-nan apply to Tibetans.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16
Pa.1-1 AE7

S P 291 edges with stripes of red, white, and yellow. To complete the costume a very short jacket similarly ornamented is also often worn over the other jacket.

S P 771 But the most remarkable thing about these Shans is that they are not Buddhists, but spirit worshippers. They are the only non-Buddhist Shans I have ever come across, except a few scattered families of the race whom I found in northern Yün-nan and in Tibetan Ssŭ-ch'uan. They have possibly lived so far from the influence of both Burma and Siam that Buddhism has never reached them. By Buddhism I do not of course refer to the religion of China, but to the Burmese form of Buddhism which is so universal among the Shans of Yün-nan.

S P 342 The houses at Mo-sha are built of soft mud bricks and have flat roofs made with timber, covered with earth. These flat roofs are a peculiarity of the Hsin-p'ing Hsien district, in which we had now arrived. Chinese, Lo-los, and Shans all build alike, and use their roofs to sit on, and also as a place to stack wood and straw. This style of building I do not remember to have seen anywhere else in Yün-nan. We slept at Ta-t'ien-fang, a village which lies up a little side valley, and is called Ho-nam-tok by the Shans.

S 132 The next morning, the 11th January, we had a very steep climb up to Chiu-ti-mo, the road at one time rising 1,400 feet in a mile. We were here wrapped in dense mist, which did not clear till just before sunset. The mist in the Red River valley is curious. Down in the plain the air is quite clear and dry. The bottom of the mist is at about 3000 feet in the morning, extending up to 5000 feet. It then gradually rises till its top reaches 7000 feet, and it does not disappear till late in the afternoon. Villages like Chiu-ti-mo, which are at about 5000 feet, live in almost perpetual damp and darkness, and the mist makes it very cold all day.

000 Crossing a range we reached Hsin-p'ing the next day. The place lies far from all main roads, and the populace had apparently never seen a European before[1]. They had got wind of our coming, and the whole population lined the

[1] M. Rocher I find visited this town in 1872.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

000 some miles, and then came into a valley which runs by a most precipitous gorge into the Yangtze. Where the plateau ends is a fine waterfall, with a sheer drop of 200 feet. A strong wind was blowing at the time, which carried the spray off quite 100 yards, and the sun shining on this turned it into a magnificent rainbow.

The road cannot follow this valley down, but turning away to the east crosses a spur at nearly 10,000 feet, and descends to K'a-hsi, where I found a very hospitable Lo-lo head-man, who put me up in his house and offered me snuff.

•132 In the morning when I got up the thermometer was down to 21°, and a bitterly cold wind and a slight fall of snow made us very glad to get down into the warmer climate of the Yangtze valley, which is at an elevation of 000 2,850 feet. The river makes a very sharp bend to the north here, not previously shown in any map, and it is at the extreme north corner of this bend that lies Hung-mên-k'ou, the ferry by which we crossed.

The width of water is about 150 yards, and the river runs with a strong current between banks which for 200 or 300 feet up from the water's edge are everywhere very steep and in most places precipitous. Even the road leading down to and up from the ferry is so steep and rocky that the mules found considerable difficulty in getting over it. The hills on each side rise to a height of 11,000 feet, and are extremely steep and a mass of rocks and stones, with a few little ledges where there is just room for a small village and a little cultivation. The very difficult nature of this part of the country quite accounts for the main road from Yün-nan Fu to Hui-li Chou making a considerable circuit to the west by Yüan-mou Hsien and Lung-kai Ferry.

After crossing in a large boat we went on three miles to Ta-p'ing-ti, the nearest village to the ferry. The Yangtze is here the boundary between Yün-nan and Ssŭ-ch'uan, so we were now in the latter province. I have usually called the river the Yangtze as it is more convenient to call a river by the same name throughout its course. But to the Chinese it is here known as the Chin Chiang or Gold River. In Yün-nan Fu I have heard it called

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

Continuing our journey the next day, the 17th March, we passed through splendid forests along the course of a stream in which we found a party of Tibetans digging for gold. Leaving this valley we ascended another range, reaching the top at 14,500 feet. Lachman Jadu and I climbed up 500 feet higher and got a fine view of the surrounding country. In the distance to the north-west of us, two magnificent snow-covered peaks towered above the rest to a height that I should estimate as quite 20,000 feet.

From here we descended to K'u-lu[1], a village of perhaps 60 houses and some large monasteries, the biggest place we had seen for many days. The lamas had evidently got news of our coming, for we found a man waiting for us who showed us a house, and room to camp round it, a little outside the main village.

K'u-lu was the most thoroughly Tibetan place we had yet come across, and it was here that I saw yaks for the first time. There was one tied up just outside our camp, which presented a curious appearance in the morning, covered with icicles hanging to its hair all over. So far I had been agreeably surprised with the warm temperature, for even at night there had only been a few degrees of frost, but here at K'u-lu at 12,500 feet it was decidedly colder, and the thermometer fell to 17°.

The people here are thoroughly Tibetan in manners and customs, and very few of them understand any Chinese. They live in large well-built stone houses, calculated no doubt to keep out the cold which is probably often more severe than we found it in March.

The lamas of K'u-lu were very suspicious. They asked me to halt a day so that we might talk things over and arrange for the continuance of my journey. I did not see what in the world we had to talk about and would not agree to this.

The next morning my interpreter went to the village to see about a guide, and was asked into the monastery by the head lama. He found that dignitary having an early break-

[1] Mr Amundsen marks a place called Kang-u about where K'u-lu is. Probably Kang-u is the Tibetan and K'u-lu the Chinese name. See *Geographical Journal* for June 1900.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

The name Liu-t'ou-chiang is Chinese, meaning "bridge-head river," for *liu-tzŭ* is the name by which they call the rope bridges.

For five more days our road lay up the valley of the Mekong, but the going was by no means flat. The hills on both sides of the river are very steep and full of landslips, the formation being loose shale. The path keeps up on the hillside, rising in places to 10,000 feet or more, and continually crossing bare brown-looking spurs.

Between these spurs are little side streams running down from the snow-covered tops of the range, and in these little valleys the villages are prettily situated, surrounded by green fields of wheat and barley, and by pear and peach trees which were then in blossom.

The Mekong runs for the most part between steep banks and there is practically no flat ground along it. To the west is a fine snowy range, the highest peaks of which Ryder made about 20,000 feet by observations with the long-shaped clinometer.

The Tibetan inhabitants of this valley appear well off and live in an excellent climate where it does not get extremely cold. Their houses are well built, often of three storeys, the ground floor solidly constructed of stone, and the two upper floors usually of wood. The roofs are flat, made of large beams covered over with mud, and the upper storeys are built so that they cover less space than the storey below them; thus part of the roof of one storey forms a terrace or verandah to the storey above it.

On the 28th of April we reached Ya-k'a-lo, a straggling village of 100 houses. The place is important because of its salt wells which supply all this part of the country.

On our second march out of A-tun-tzŭ we had already met one French missionary, Père Bourdonnec who was on his way to Tzŭ-ku (Tse-kou according to French orthography). At Ya-k'a-lo we were to have the pleasure of finding Père Grandjean who had come from Ba-t'ang to take Père Bourdonnec's place during his absence. He took much interest in our project of getting through to Assam, though he did not give us much hope of success. We are much indebted to him for the assistance and advice he was always so ready to give us.

5: Davies : G-5 (1894-1900) 1909 AF16 Southwest China AF16

ually wear are made of felt and soled with leather. Our own boots were in a deplorable condition after 2000 miles of Chinese roads, and we were glad to be able to get such serviceable substitutes as the Tibetan article. They are not, however, altogether comfortable: the sole is so thin that every sharp little stone can be painfully felt through it.

We had brought with us some musical boxes and field glasses as presents to reward friendly individuals who might assist us in our travels, but we soon found that among Tibetans there was not the slightest prospect of finding anyone friendly enough to deserve a present. So we began to make use of these things in our horse dealing bargains. Two musical boxes and a pair of glasses was the price of a very nice pony we bought from one of the military mandarins.

The climate of Ba-t'ang we found extremely pleasant, very much like a hot summer day in England. During our stay the maximum temperature was 80° and the minimum 55°. The heat can never be very great in summer. Snow, they say, falls occasionally in winter but always thaws by the middle of the day. The place lies too high to cultivate rice, but wheat and barley grow well, and peach trees appear to thrive. We made the height 9,300 feet by both aneroid and boiling point thermometer. This is considerably higher than the observations of other travellers. Desgodins gives 8,065 feet, Rockhill 8,223 feet, Bower 8,500 feet, and Gill 8,546 feet[1].

The inhabitants of Ba-t'ang we found quite pleasant, and Manifold made them still more friendly by performing several operations for cataract. After the first patient—an old woman—had been successfully operated on and found she could see again, there was quite a run on Manifold's services and he restored the sight of seven people altogether. There was some danger that the patients would be too anxious to use their eyes again and would not keep them bandaged for the necessary four days, but we heard afterwards that all the operations were successful.

[1] Hosie, however, who has visited Ba-t'ang since we were there, makes the height 9,184 feet.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

much, and Manifold gave the little boy some medicine for warts on his fingers.

Ya-ra-gong is the name really of a district under Ba-t'ang and not of any particular village, but this village may be considered as the headquarters of the district, as Troi-gön, the principal monastery, which contains 300 lamas, is here. The height of the house we put up in (which is somewhat lower than the French mission) we made 11,900 feet. The climate at this time of year was very pleasant. Père Soulié told us there was a rainy season beginning in June but that the rain is not very heavy or continuous.

We stayed at Ya-ra-gong rather longer than we intended as the Gurkha naik who had been hit by a stone at the Mekong bridge was not going on very well. He had a good deal of fever and his head began to swell again. However, two days' rest did him a lot of good and he soon afterwards made a good recovery.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

APPENDIX III

THE CLIMATE AND PRODUCTS OF YÜN-NAN.

In so large a province the nature of the country and the crops grown, naturally vary somewhat, but except in the north-west corner there is a sufficiently close general resemblance between other parts of Yün-nan. 132

Let us deal first therefore with this north-west corner which in the nature of the country and of its inhabitants is purely Tibetan, forming with western Ssŭ-ch'uan that part of Tibet which is directly under Chinese rule.

Southwards the Tibetan tract extends to about the 27th parallel of latitude. North of this line is a country of very high mountain ranges, the plains even rising to from 8000 to over 12,000 feet. The climate here is naturally colder than other parts of Yün-nan, and where heights extend from 6000 feet on the river banks to over 15,000 feet on the hill-tops, it varies much in different places. At the higher altitudes snow may fall in any month of the year, and many of the passes are liable to be blocked throughout April. In the plains the climate is less severe, but except in a shut-in river bed it never becomes hot.

Parts of this country, especially the tops of the mountains, are bare and barren, but a great deal of it is clothed in fine forests of cedar, fir, and other trees. Rice cultivation hardly exists here: even the plains are too high and cold to grow it. A certain amount of maize is cultivated, but even for this a fairly warm climate is necessary, and the bulk of the crops consist of wheat and barley. Peach, walnut and other fruit trees also exist. 241 137

The cereal products of this part of Yün-nan are however scanty and poor. It is essentially a grazing country, for good grass is to be found nearly the whole year round. 233

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

166 the neighboring provinces of interior China. The influx of these heterogeneous groups of immigrants brought with it many ideas and practices to help in the adjustment of the people to their new environment, particularly in connection with agricultural and forestry land use. This fact helps to explain the present heterogeneity of the agricultural landscape of the Basin.

463 439 Agriculture and forestry are the outstanding features of the economy of the Szechuan Basin. Approximately 85 per cent of the people gain their livelihood from agricultural pursuits. In terms of exports from the Basin, however, the leading item, Tung oil, is a forest product. Most of the other exports are either agricultural or forestry products.

241 312 In so far as agricultural land use is concerned, nowhere else in China except in Szechuan Basin does one find terraced fields so extensively, elaborately, and finely made, and irrigation systems so greatly diversified and ingeniously devised. The Basin is almost literally a country of "millions of minute steps" and a land of "thousands of small ditches." The terraced fields and the irrigation ditches, together with the hard-working peasantry have helped to transform the otherwise hostile rugged Szechuan Basin into a smiling garden.

Other unique features of the Basin's agricultural land use include the age-old but the recently much publicized Tung Shui Tien (winter storage water field) system; the cultivation of Tsai Seng Tao (double-growth) variety rice; the numerous special methods of soil culture, fertilization, composting, and crop rotations; and the various elaborate systems of inter-culture and synchronization of crops.

133 As has been implied, the Basin is a natural unit. Its combination of surface, climate, soil, and drainage is unlike that of any other part of China. In large measure, the interior of the Basin within the mountainous border is made up of hill country which varies from hilly areas of low relief in the south to the fairly high parallel anticlinal ridges in the east and to a border of complex hills at the north. Near the western edge of the Basin, the hills give way to the Chengtu Plain, a broad piedmont alluvial plain, the most productive part of the Basin.

•132 Climatically, the Basin has a phase of the "humid subtropical" type of climate.[1] The Basin extends from latitude 28

---

[1] G. Trewartha, An Introduction to Weather and Climate, Plate I, 1937.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

to 33 degrees North. It has a mild winter with little or no frost or snow, and a warm summer. The average annual precipitation in most parts of the Basin is about 34 inches, with some rain in every month. The summer months, however, have more rain than the winter months. There is almost continuous high relative humidity, and wind, on the whole, is conspicuous by its absence.[1] 132

The Basin is drained and practically bisected by the Yangtse River. The Yangtse enters the Basin at the southwest and leaves it at the northeast. Within the Basin, the Yangtse is fed by three sets of tributaries--one from the north, one from the northwest, and one from the south. The northern and northwestern tributaries rise in the high mountains which rim the north and northwestern part of the Basin, and their flow greatly exceeds that of the southern set of tributaries. On the whole, the Basin, with its hilly terrain, is well drained. In fact, problems of erosion are much more acute than problems of drainage. 133

Generally speaking, the soils of the Basin fall into two main groups. One is the extraordinarily fertile soil of the Chengtu Plain and the other is the moderately fertile soil known as the "purple-brown (forest)" type,[2] which dominates in most parts of the Basin. The Chengtu Plain soil is derived from the alluvial deposits of the Min River. The richness of this soil is greatly enhanced by its annual renewal through the overflow of the Min. The Chengtu Plain soil is noted for its very dark color, great depth, and rich humus content. The "purple-brown" type, developed in deciduous forests growing on parental material derived from the friable, cretaceous shales and sandstones, is only moderately fertile for agricultural use. This soil is noted especially for its loose texture and easily-eroded qualities. Moreover, this soil has a peculiar characteristic of absorbing and loosing (evaporating) water quickly.[3] One evening's thick fog may cause the whole depth of the surface soil to be thoroughly moistened and saturated, whereas a continuation of clear sky for several days may cause the soil to dry up and crack. In general, the "purple- 134

---

[1] Bureau of Reconstruction, Annual weather report (Szechuan, 1939), p. 29.

[2] J. Thorp, Soil Geography of China (1936), p. 200.

[3] H. Yu, "A Preliminary Observation of the Purple-Brown Soils of Szechuan Province," Soils Quarterly, January, 1941, p. 39.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

success is evidenced by the remarkable fact that during the past twenty-two hundred years, ever since this irrigation work was built, there have been only six minor floods in the Plain. 312

The presence of innumerable other irrigation projects, greatly diversified in construction and surprisingly adaptable to the local topography and source of water supply, bears witness to the painstaking and extensive adjustments the Basin has made to the vital problem of water supply.

A second adjustment to water resource lies in the fact that even with its limited available technological knowledge, the Basin has made good use of many of its numerous streams. By canalization, damming, and other devices, the navigability of these streams has been greatly increased. Especially the successful negotiation by steamboats of the bottle-neck (gorges) of the mighty Yangtse has greatly tempered the continental position and the land-locked character of the Basin. These achievements, in turn, have facilitated the movement of the bulky agricultural and forestry products among the various areas both within and without the Basin.

The localization of the Basin's urban units on the terraces and along the banks of the principal rivers is a third example of adjustment, partly to topography and partly to river transportation. 361

Among the climatic adjustments, the architecture of the Basin (characterized by the projecting eaves, recurved roofs, and elaborate roof ornaments) is closely correlated to the absence of wind and snow and the extended misty rain-season of the Basin. 132● 341

The practice of digging in the soft, friable, cretaceous bed rock, in order to hasten weathering and soil formation for agricultural land use, represents one of the most astounding examples of soil culture and environmental adjustment in the Basin. 242

As a result of the abundant growth of bamboo in the Basin, an interesting adjustment to vegetation has taken place. Nowhere else in China except in the Basin does one find widespread use of bamboo. In addition to the large number of articles of furniture, household tools, and utensils of various kinds which are made from this material, even the great engineering construction works, including the important irrigation systems, bridges, and brine-salt mining equipment are all made of bamboo. It was once estimated that bamboo is used for six hundred different purposes in the Basin. Here people are truly in the "bamboo age." 314

132
102

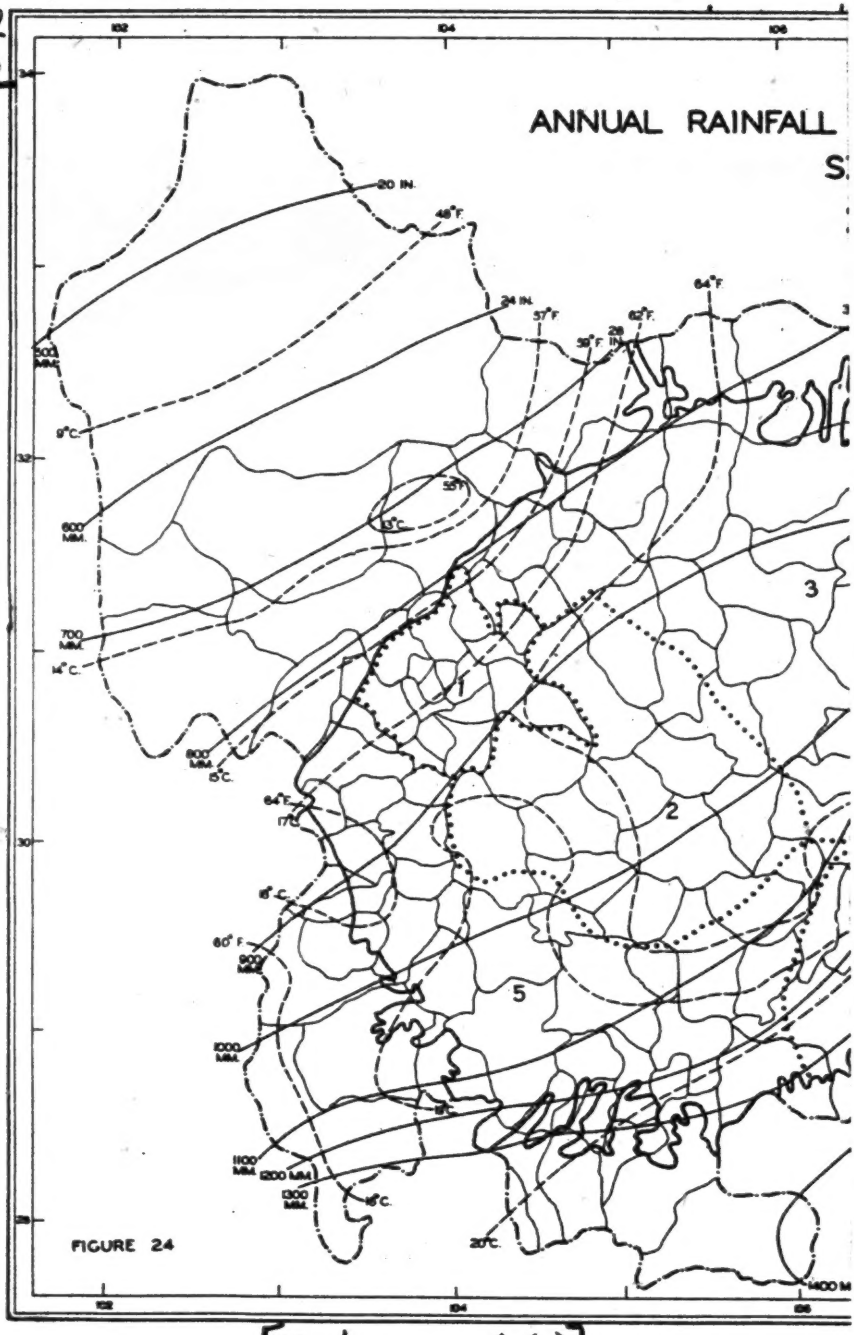
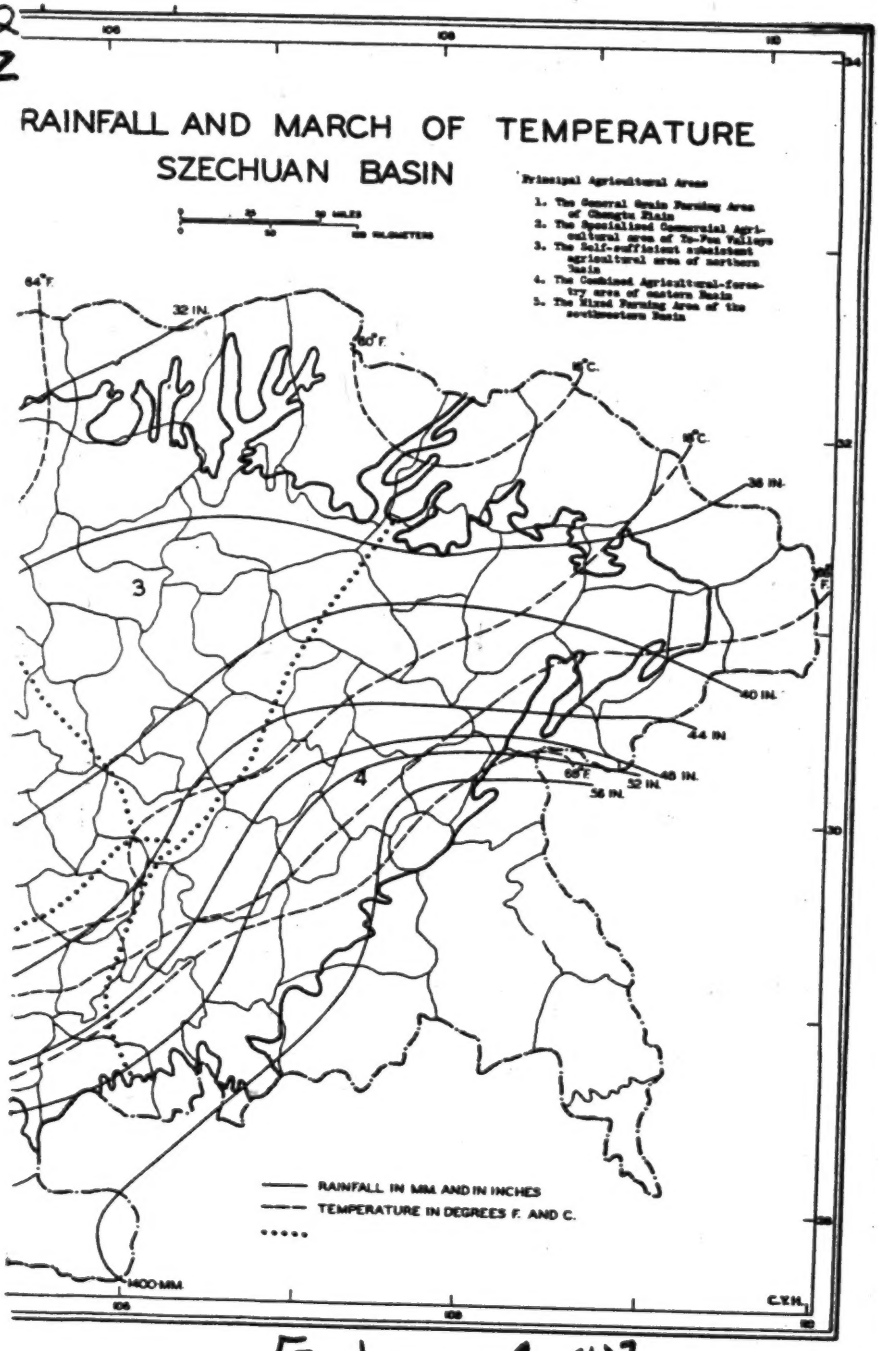


FIGURE 24

[End map 9 (a)]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

● 132
102



[End map 1 (b)]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

C. Agricultural Land-Use in Relation to Natural Elements

1. Agricultural Land-Use and Climatic Conditions

● 132

Szechuan Basin has a unique climate. This climate is dictated more by its topography than by its latitudinal position.[1] To be specific, there are three chief factors affecting the climate: (1) the location in the interior of an extensive continent and a minimum of marine influence; (2) the surrounding high mountain ranges (these afford protection particularly against the strong Siberian and central Asiatic winds [by the Tsing-ling range to the north], as well as considerable protection against the monsoon [by the Taliang-shan and the Hsiao-Liang-shan to the south]); (3) the relatively high elevation above the sea (the average is about 1,250 feet and thus the Basin's summer climate is tempered considerably). The combined operation of these three factors has accounted for the exceptionally mild (for its latitude), cloudy, humid, and almost windless Szechuan climate. Especially the "Basin" character (surrounded by lofty ranges) of the Basin has cut down considerably the intensity of solar radiation and consequently the low evaporation rate. The two foregoing factors, in turn, cause the always cloudy skies and humid weather in the Basin.

The actual climatic conditions of the Szechuan Basin may be understood by separately considering "temperature," "rainfall," "evaporation and humidity."[2]

---

[1]The Basin's northern-most boundary lies at latitude 32 N., corresponding to the latitude of Nanking; and its southern-most boundary lies at 26 N., corresponding to Foochow along the south China coast.

[2]The weather record throughout the Basin is rather a recent affair. With the exception of Chungking, which has a record of over forty years (kept by Customs) and Chengtu, which has a record of a little over ten years, most of the stations were established only during the last few years. In 1936, the Bureau of Reconstruction of the Szechuan Provincial Government established weather stations at Lo-shan, Nei-chiang, and Suining. Later, in 1937, more weather stations were established at Wan-hsien, I-ping, Ta-hsien, Yu-hsien, Lu-hsien, Ya-an, O-mei, and Sung-pang. The ultimate objective of this program is to establish, if possible, one weather station at each Hsien (district) throughout the province. The lack of long-range weather data has handicapped considerably any satisfactory discussion of the climate of the Basin. But, in spite of this fact, the present data, as presented here (Fig. 24), do give us a much better idea of what the climatic conditions of the Basin are than otherwise could have been possible.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

a) Temperature.--First of all, the temperature varies considerably within the Basin. The isotherm of the average annual temperature, running in a northwest-southeast direction, in most cases decreases from northwest to southeast (Fig. 24). The temperature is usually mild, as compared with other places having the same latitude. For instance, in the coldest month (January), Chengtu has an average temperature of 5.5 degrees C. (42°F.) (Fig. 22); and the January average for Chungking runs as high as 8.8 degrees C. (48°F.) (Fig. 23 and Table 3). These temperature readings are much higher than places of approximately the same latitude or points even slightly farther north in other parts of China.[1] The average for the hottest months through most parts of the Basin is generally around 28-29 degrees C. (82-84°F.). Thus the typical annual average range is about 4.4 degrees C. (40°F.). The record for the hottest day in the Basin seldom runs higher than 35 degrees C. (95°F.), and the coldest day very rarely drops below freezing. This gives an absolute annual range of about 15.5 degrees C. (60°F.). In most parts of the Basin, the average annual temperature is between 17 and 18 degrees C. (62 and 64°F.) (Fig. 24). 132●

According to the reports of the last ten years (1929-39), Chengtu had an average of about ten days of frost per year, while Chungking had an average of only two days of frost during the same period. For the Basin as a whole (with the exception of isolated hilly areas), the frost-free season, or the growing season, is about 340 days per year. But many parts of the Basin are practically frost-free all the year round. The mildness of the climate certainly has a great deal to do with the agricultural prosperity of the Basin.

b) Rainfall.--Rainfall is a second major element in the climate of the Szechuan Basin. The total annual rainfall throughout the Basin is fairly sufficient for agricultural production. It ranges from 500 millimeters in the northwest to 1,400 millimeters in the southeast (Fig. 24). There are some exceptional cases at the fringes of the Basin. The wettest place on record

---

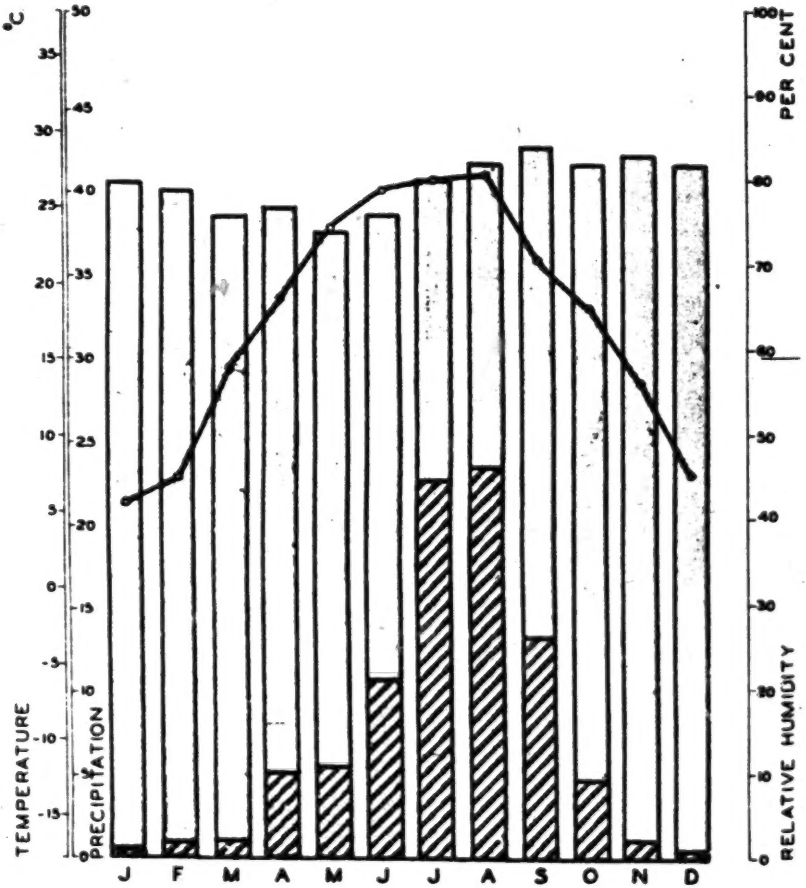
[1] Shanghai, 3.3°C.; Nanking, 2.2°C.; Hankow, 2.9°C.; Changsha, 4.1°C.; Hankow, 1.2°C.; Wenchow, 7.2°C.; all these cities of about approximately the same latitude or slightly higher northward have lower January averages in temperature than that of both Chungking and Chengtu (cf. Report of the Central Meteorological Station [Nanking, 1936]).

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

FIGURE 22

CLIMATIC DATA OF CHENGTU

1929-1939



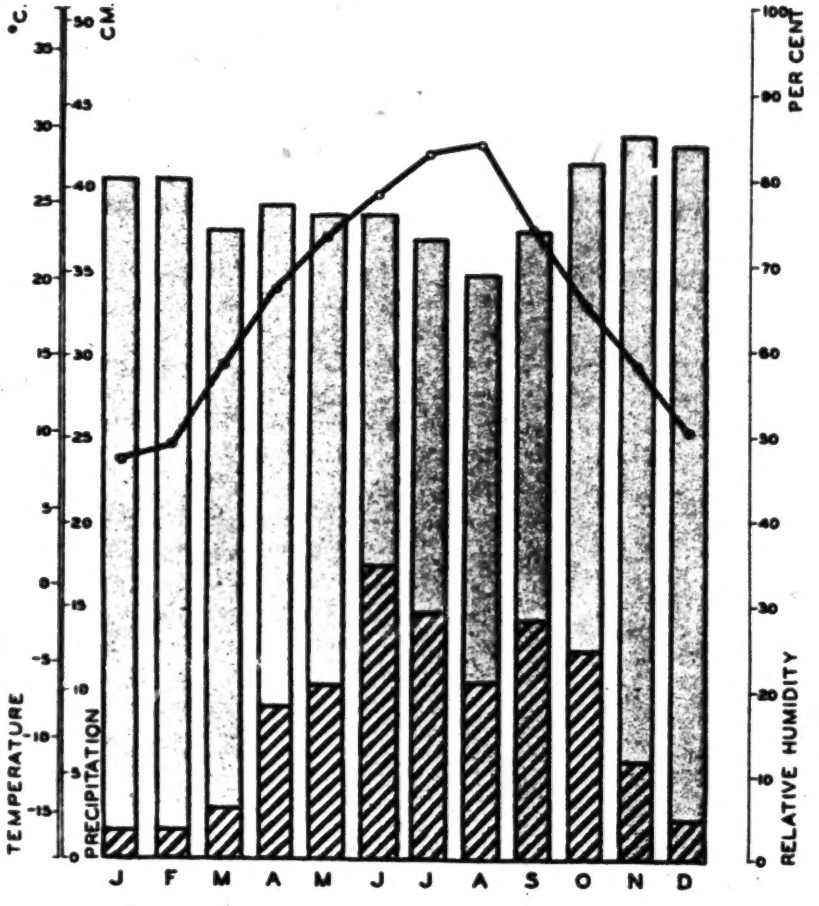
[Face p. 47(a)]

FIGURE 23

CLIMATIC DATA OF CHUNGKING

1913 - 1939

132 ●



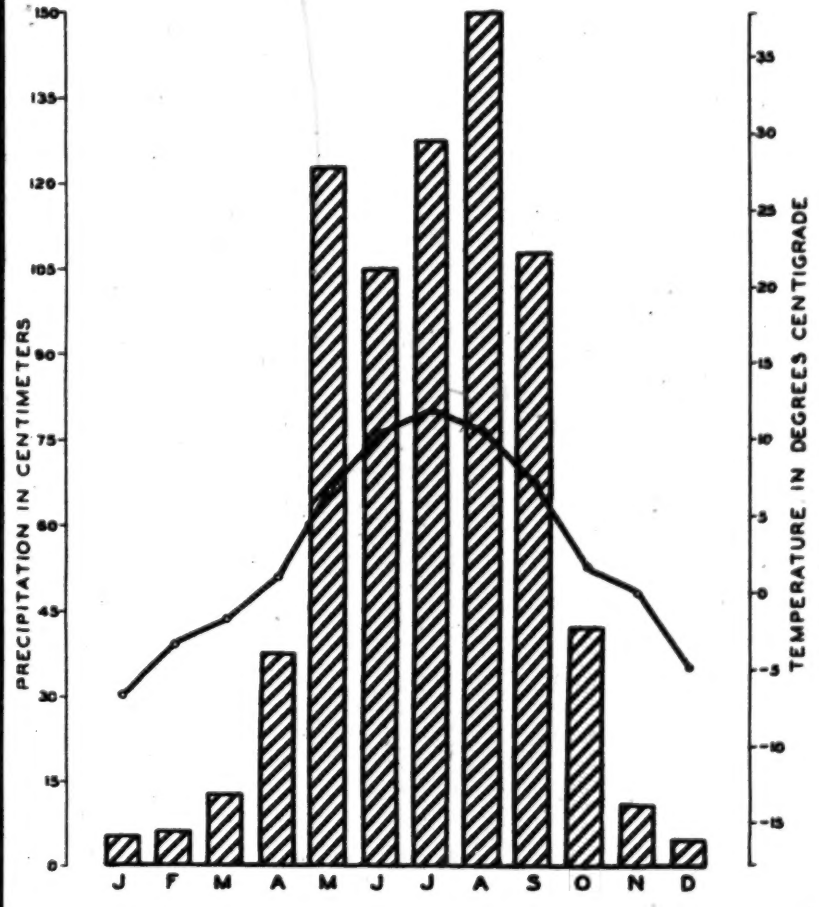
[Face p. 47 (b)]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

FIGURE 25

CLIMATIC DATA OF OMEISHAN

1932 - 1933



[Face p. 48]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

•132 (on the basis of the record of thirteen months, 1932-33), is Omei Shan, which is over 3,000 meters in elevation and has a total annual rainfall of over 7,700 millimeters (Fig. 25).[1]

The isohets generally have a northwest to southeast direction. The amount of rainfall increases from northwest to southeast (Fig. 24). In the northern part of Sun-pang district, the rainfall runs as low as 500 millimeters, while in the areas of Peng-shui, Feng-tu, Yu-yang, and Siu-shan the rainfall runs as high as 1,400 millimeters (Fig. 24). The average annual rainfall in most parts of the Basin is between 850 and 950 millimeters (34-38 inches) or thereabouts.

A major portion of the rainfall comes during the summer. However, unlike many other parts of China, particularly the lower and central Yangtse Valley, which is dominated by the monsoon influence, the summer rainy season in the Basin is much longer, and the rainfall is much more evenly distributed throughout the year. For example, the rainy season of Chungking (Table 3) begins generally about the early part of April and ends in the later part of October. The seasonal distribution (in percentage) of annual rainfall in Chungking is as follows (Table 3): Spring, 26 per cent; summer, 41 per cent; autumn, 28 per cent; and winter, 5 per cent. The rainy season is thus definitely longer than in the areas of the central and lower Yangtse Valley.

Moreover, the manner of rainfall and the number of rainy days is even more significant than the total amount and the seasonal distribution. In the Basin the rainfall seldom comes in torrent, but generally falls in a moderate flow, almost in a mist. Consequently, with the given amount of rainfall, the rainy days are many and long-drawn out (Table 3). For instance, in Chungking, Chengtu, and many other areas of the Basin, during the rainy season, generally between the later part of May and the early part of September, the rainy and cloudy days may run as many as 15-20 days per month (Table 3).

c) Evaporation and humidity.--Ordinarily, in most parts of the Basin, noted for its cloudiness and known as the "cloudy province," the sky remains overcast most (over 70 per cent) of the time during the year. Sun is a rarity in this part of the world. The proverb, "shu chuan fei jih," literally meaning "the Szechuan

[1]Bureau of Reconstruction, Szechuan Provincial Government, Annual Weather Report (1936).

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

• 132 dog barks at the sun," is a good testimony to the truth of this generalization. Here, the air is still, and the evaporation rate is low most of the time.

These natural phenomena have a vital practical importance to the prosperity of the agricultural land-use in the Basin. The penetrating and soaking effect of the misty rain on the friable and soft sandstones and shales has hastened weathering and quickened soil renewal. On the other hand, the loose, friable, and shallow purple-brown soils of the Basin are singularly susceptible to torrential rain and quick evaporation.[1] Given a south-China type of summer rainfall, coupled with a north-China type of winter sunshine, the Szechuan Basin, instead of being one of the richest agricultural regions of China, would long since have been denuded into a desolate and unpeopled wasteland.

On the whole, the rainfall is fairly reliable throughout the Basin. Famines are rare, though drought sometimes threatens fields in more hilly areas.

Finally, the climate of Szechuan Basin is noted for its exceptionally high relative humidity. Chungking has an annual average of 78 per cent, and Chengtu of 80 per cent (Table 3). This high humidity, especially in winter, reduces the demand for rainfall during that season. The same is true, in a lesser degree for the summer. Foggy and cloudy days are especially frequent, particularly during the winter season. Chungking has an average of 162 rainy and many more cloudy days during the year (Table 3). In the present air-raid "civilization," high prevalence of cloudiness certainly constitutes one of the great geographic assets of the Basin.

d) Wind velocity.--With the exception of very high hilly areas, the almost complete lack of wind in many parts of the Basin is striking. In most places, the wind velocity averages less than two miles per hour or about one meter per second (Table 3). For instance, in Chengtu city, it is a common experience for the residents there to pass several days without hearing a window rattle, or without observing a breeze strong enough even to change the direction of the smoke! This situation has its geographic significance. Besides its effect on the constructio

---

[1] H. Yu, "A Preliminary Observation of the Purple-Brown Soils of Szechuan Province," Soil Quarterly, January, 1941, pp. 39-41.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

and style of the house-types of Szechuan, as already mentioned, it has a dominant influence on many special agricultural products here. The notable example is the production of white wax. 132●

In short, the unique Szechuan climate, characterized by moderate rainfall, high average annual temperature (long growing season), high humidity, low evaporation, and virtual absence of wind, is almost ideal for agricultural production.

2. Agricultural Land-Use and Soils

The soil of Szechuan Basin is unique not only by virtue of its red and purple color, which first gave the region its name,[1] but also because of its penetrating, loose structure, its quick formation and renewal, and its relatively high fertility. Generally speaking, there are three major soil groups within the Basin, namely, (1) the purple-brown (forest) soils, which are distributed in most parts of the Basin; (2) non-calcareous alluvium and rice paddy soils, which are concentrated principally at Chengtu Plain and some other minor river valleys; (3) the slightly to moderately podsolized old and young yellow soils, which are found in the peripheral highlands, as well as in the longitudinal anticline areas of the Basin (Fig. 9). 134

a) Purple-brown (forest) soils.--According to Thorp,[2] who first made a reconnaissance study of soil conditions in the Basin, and who first offered the generalized map showing the boundaries of various soil groups, the characteristic purple-brown soils consist of slightly acid or neutral, purplish brown, or reddish surface soils, 15 to 50 centimeters thick, underlain by purple clay or clay loam soils, whose depths are seldom over two feet.[3] The color varies, depending upon the parental materials. In the western and southern part of Szechuan Basin the soils of this group are frequently reddish purple or reddish brown in color, following the color of their parent rocks. The soils are moderately rich in mineral plant foods, and are particularly tillable.

One of the most interesting physical properties of this group of soils, as recently reported through several experimental

---

[1] Richtofen, op. cit., p. 182.

[2] Thorp, op. cit., chaps. ix-xii.

[3] Ibid., pp. 202-204.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

132.

TABLE 3

CLIMATIC DATA OF CHENGTU AND CHUNGKING

Month	Average Monthly Temperature (In Cent.)	Total Precipitation by Month (In Mm.)	Frequency of Rain (Days)	Humidity (o/o)	Wind Velocity M.S.
Chengtu (1929-1939)					
January..	5.5	5.1	4	80	1.22
February.	6.6	8.1	5	79	1.37
March....	14.5	8.6	4	76	1.61
April....	19.3	50.0	9	77	1.35
May.....	23.5	58.2	9	74	1.59
June.....	25.7	104.6	13	76	1.63
July.....	26.7	224.4	12	80	1.47
August...	26.8	230.5	12	82	1.48
September	21.6	130.1	16	84	1.06
October..	18.3	50.2	14	82	1.16
November.	13.8	10.2	4	83	.87
December.	7.2	4.6	2	81	.67
Total..	17.5	884.6	104	80	1.29
Chungking (1913-1939)					
January..	8.8	16.9	8	80	1.1
February.	9.9	17.3	10	80	1.1
March....	14.3	31.1	12	74	1.3
April....	19.7	91.1	16	77	1.3
May.....	23.0	103.2	16	76	1.3
June.....	25.6	172.8	19	76	1.2
July.....	28.2	144.2	12	73	1.1
August...	29.2	102.6	10	69	.9
September	23.3	140.1	16	74	1.0
October..	18.3	124.7	20	82	1.1
November.	14.7	57.2	13	85	1.1
December.	10.2	23.7	10	84	1.1
Total..	18.8	1024.9	162	78	1.2

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

TABLE 5

RAINFALL CONDITIONS OF SUINING (COTTON PRODUCING CENTER) SZECHUAN
(1936-1937 Average)

Month	Amount of Rain (In Mm.)	Average Number of Days			
		Clear	Partly Cloudy	Cloudy	Rainy
January.....	4.7	3	13	12	5
February.....	14.5	5	3	15	5
March.....	21.8	4	16	4	7
April.....	44.4	7	8	7	13
May.....	86.5	1	10	5	15
June.....	108.5	2	5	5	18
July.....	201.5	3	7	7	14
August.....	227.0	3	6	4	18
September.....	146.0	1	2	4	23
October.....	52.6	4	2	11	14
November.....	11.3	4	9	12	5
December.....	10.9	3	4	16	8
Total.....	929.7	40	85	102	145

132
248

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

TABLE 8

CLIMATIC CONDITIONS OF TOBACCO-PRODUCING CENTERS OF SZECHUAN
(1936-1938 Average)

249
●132

Name of District	Climatic Conditions	Jan.	Feb.	March	April	May
Mei-Shan.....	Temperature (C.)	12.7	14.8	15.2	20.9	23.9
	Humidity (o/o)	77.8	76.1	69.3	68.6	75.0
	Rainfall (mm.)	3.0	....	32.0	56.8	108.5
Lo-Shan.....	Temperature (C.)	7.4	10.2	14.8	19.4	23.3
	Humidity (o/o)	70.1	70.0	58.9	64.6	64.8
	Rainfall (mm.)	1.6	15.0	15.9	64.5	141.2
Chia-Chiang.....	Temperature (C.)	8.6	11.2	....	20.7	28.9
	Humidity (o/o)	75.2	79.0	....	75.5	75.0
	Rainfall (mm.)	2.8	4.7	....	31.0	51.1
Wen-Chiang.....	Temperature (C.)	5.8	9.1	12.6	18.7	22.4
	Humidity (o/o)	77.4	75.8	72.4	72.0	71.7
	Rainfall (mm.)	8.2	23.0	9.3	4.8	102.0
Sin-Tu.....	Temperature (C.)	6.9	9.3	13.3	....	.....
	Humidity (o/o)	88.9	....	....	....	.....
	Rainfall (mm.)	2.0	11.4	5.6	85.0	112.5
Ching-Tan.....	Temperature (C.)	....	7.1	....	....	.....
	Humidity (o/o)	....	....	....	....	.....
	Rainfall (mm.)	....	14.3	....	29.7	.....
Mien-Chu.....	Temperature (C.)	....	8.6	13.2	18.2	.....
	Humidity (o/o)	....	81.1	73.0	71.0	.....
	Rainfall (mm.)	....	4.0	15.7	24.2	.....
Te-Yang.....	Temperature (C.)	6.3	10.1	14.6	19.9	24.1
	Humidity (o/o)	81.1	73.2	64.6	62.7	66.8
	Rainfall (mm.)	11.0	10.3	3.0	27.6	94.9
Shih-Fang.....	Temperature (C.)	....	....	....	19.1	22.7
	Humidity (o/o)	....	....	....	81.2	77.0
	Rainfall (mm.)	....	....	....	21.5	118.6
Pi-Hsien.....	Temperature (C.)	6.1	7.8	14.0	18.8	22.9
	Humidity (o/o)	75.5	75.6	72.9	70.9	73.5
	Rainfall (mm.)	.2	10.5	9.8	31.6	145.3

TABLE 8—Continued

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average
26.5	27.9	27.6	24.4	21.3	15.2	9.4	233.2	19.4
77.8	82.1	70.4	79.9	76.5	73.2	78.1	904.2	75.4
124.1	354.0	366.2	41.3	7.4	1.9	12.8	1047.7	....
24.0	26.1	26.4	22.1	18.7	12.1	9.0	203.5	17.7
75.6	70.2	82.3	84.6	79.1	75.1	80.5	885.1	73.7
81.6	166.4	52.1	216.9	89.1	20.0	21.8	.....	....
24.8	27.5	27.7	23.7	19.1	12.8	9.5	.....	....
77.3	78.5	86.1	.....	....	82.7	88.9	.....	....
101.3	205.7	220.7	116.9	42.2	16.9	40.3	.....	....
24.3	20.0	26.7	22.0	18.2	10.6	3.4	204.8	17.1
78.3	81.8	81.3	82.8	80.9	78.6	76.0	929.0	77.4
161.2	461.6	172.0	205.0	86.4	18.5	9.5	1221.6	....
.....	.....	.....	.....	....	....	8.6	.....	....
.....	.....	.....	.....	....	....	58.4	.....	....
70.0	368.0	126.7	217.5	25.0	3.0	....	1027.5	....
25.1	26.5	.....	22.5	18.5	11.5	8.8	.....	....
78.2	77.7	.....	84.3	80.8	81.3	85.5	.....	....
27.5	263.4	.....	111.5	28.6	5.3	15.0	.....	....
24.3	26.9	27.6	21.5	17.8	10.4	6.6	.....	....
81.9	85.5	84.5	80.8	87.2	88.5	....	.....	....
88.6	424.1	318.7	157.8	44.7	26.9	....	.....	....
21.9	25.4	29.0	22.2	19.0	13.5	9.3	218.3	18.2
78.9	75.1	73.5	80.3	....	77.8	79.3	.....	....
78.0	28.8	67.2	12.8	....	15.2	13.4	.....	....
23.9	25.9	27.3	22.2	18.4	10.8	8.7	.....	....
82.9	81.6	82.4	84.6	79.8	78.3	78.6	.....	....
144.6	48.2	155.1	239.5	21.3	24.0	5.1	.....	....
24.6	25.8	27.1	21.7	18.1	11.5	8.3	260.7	17.2
80.4	83.2	83.4	83.8	82.5	81.9	80.0	943.6	78.6
134.9	311.1	515.1	245.0	30.5	11.8	9.7	1455.5	....

249
132

Hu K-5 (1934-) 1946 AF16 Southwest China AF16

TABLE 9

CLIMATIC CONDITIONS OF THE HEMP-PRODUCING DISTRICTS OF SZECHUAN
(1936-1938 Average)

248
132

Name of District	Climatic Conditions	Jan.	Feb.	March	April	May
Wen-Chiang.....	Temperature (C.)	5.8	9.1	12.6	18.7	22.4
	Humidity (o/o)	77.4	75.8	72.4	72.6	71.7
	Rainfall (mm.)	8.2	23.0	9.3	4.8	102.0
Tsung-Ching.....	Temperature (C.)	....	....	....	....	24.6
	Humidity (o/o)	....	....	....	....	79.8
	Rainfall (mm.)	....	....	....	....	40.0
Kuan-Hsien.....	Temperature (C.)	....	....	....	19.4	22.7
	Humidity (o/o)	....	....	....	65.3	63.1
	Rainfall (mm.)	....	....	....	49.6	100.8
Pi-Hsien.....	Temperature (C.)	6.1	7.8	14.0	18.8	22.9
	Humidity (o/o)	75.5	75.6	72.9	70.9	78.5
	Rainfall (mm.)	.2	10.5	9.8	31.6	145.3
Shuan-Liu.....	Temperature (C.)	6.6	8.3	13.6	18.7	23.0
	Humidity (o/o)	89.8	84.6	75.3	76.4	79.1
	Rainfall (mm.)	.5	10.7	7.1	31.1	70.0
Sin-Tsing.....	Temperature (C.)	....	....	....	....	.....
	Humidity (o/o)	....	....	....	....	.....
	Rainfall (mm.)	....	....	....	....	.....
Peng-Hsien.....	Temperature (C.)	5.9	....	....	....	24.6
	Humidity (o/o)	89.5	....	....	....	66.5
	Rainfall (mm.)	.8	....	....	....	137.2
Tsung-Ning.....	Temperature (C.)	5.6	8.7	12.4	18.3	22.4
	Humidity (o/o)	82.8	84.7	82.1	79.5	79.8
	Rainfall (mm.)	5.4	6.6	20.2	11.3	160.5

TABLE 9—Continued

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average
24.3	26.0	26.7	22.0	18.0	10.6	8.4	204.8	17.1
78.3	81.8	81.8	82.8	80.9	78.6	76.0	929.0	77.4
161.2	461.6	172.0	205.0	46.4	18.5	9.5	1221.6	....
25.6	27.0	27.5	22.9	19.3	11.6	9.1	.....	....
84.4	88.3	.....	.....	81.3	83.9	80.7	.....	....
54.0	440.0	.....	446.7	150.1	51.2	10.7	.....	....
24.6	25.4	26.9	20.7	19.4	12.2	7.8	.....	....
71.1	79.4	.....	85.9	.....	69.6	66.5	.....	....
188.2	878.7	456.5	244.6	187.7	57.3	32.3	.....	....
24.6	25.8	27.1	21.7	18.1	11.5	8.3	206.7	17.2
80.4	83.2	83.4	83.8	82.5	81.9	80.0	943.6	78.6
184.9	311.1	515.1	245.0	30.5	11.8	9.7	1455.5	....
24.8	25.8	27.2	22.3	18.4	11.4	8.7	208.8	17.4
86.6	.....	87.6	88.5	86.0	85.2	88.3	.....	....
51.2	447.8	197.2	163.7	45.2	10.6	7.8	1042.0	....
26.4	27.1	28.0	23.2	19.1	11.9	9.3	.....	....
74.2	80.5	79.8	83.1	77.5	75.5	79.7	.....	....
106.9	378.5	337.1	175.9	34.4	16.0	17.4	.....	....
23.5	28.6	27.5	22.2	17.8	10.9	9.0	.....	....
78.9	72.8	.....	84.5	84.6	79.8	82.0	.....	....
53.0	46.7	54.0	76.3	20.9	17.3	5.5	.....	....
23.8	25.6	27.5	22.6	18.5	10.5	8.6	.....	....
85.7	.....	87.8	.....	88.2	88.6	81.9	.....	....
89.7	168.3	69.5	82.8	70.6	13.8	23.2	.....	....

SW. China AF16

137 that bear spruce forests up to 4,500 meters, whereas the peaks, many of which rise up well above 5,000 meters, are treeless and were completely covered with snow when I saw them (Plate XXX).

132 In the entire upper Yangtze Valley many fields are laid out on countless artificial terraces all the way up the slopes, but today they are abandoned, and have been for a long time, so that large trees and underbrush have grown up. Some people said the reason for this may be attributed to the many wars and disputes that have reduced the population so much during the last century /170/ so that today these fields are no longer needed. However, this assertion seemed to be contradicted by the fact that these abandoned sites can be observed over too large an area and almost as far as Dawo, that is, in entirely different states. Other people said that increasing drought conditions accounted for the abandoned fields; they did not yield enough. This may be true because the fields are almost always on a southern slope which dries out in the sun. Throughout Tibet as well as in the Himalayas, as I have already mentioned, stands of forests are well developed only on the northern slopes (1), and thus we may realize

1. This may be observed in the north as far as the Tien Shan and Altai, and in the Altai it was already observed by the Chinese philosopher Ch'ang ch'un when, in July 1221, he rode over the Tsch'ang sung pass on his journey to the court of Genghis Khan.

what an important factor the drying quality of the sun is. The second explanation is therefore probably the correct one, because, as far as I could see, the abandoned acres were not capable of being irrigated and depended on natural rainfall. In some places, however, as for instance on the border between Dergi and Ling gose, I did get the impression that the border feuds had depleted the population and resulted in the abandonment of the acres. In the valley between Nan dyi gomba and Gose gomba there were many ruins of houses next to destroyed fields. But the most recent changes have taken place only in the course of the last half century. (2)

2. Father Desgodins who spent a long life in South Tibet, said in 1875 already that the population of Southeast Tibet was decreasing. He blamed the endless disputes, but above all, the strictness of the Gelugba sect.

T 789

valley and stick the twigs in the middle of their fields next to a white stone which represents the heart, three twigs for each field and one at each of the corners. In summer when the grain is ripening the hail exorcisers live in the mountains for weeks at a time and exorcise each thunder cloud that comes up. The underlying idea is that hail always comes from the mountain spirits of the big forest mountains, and that these spirits fight each other with hail stones, but they can be appeased through the exorcism of a competent Bönbo. If in the course of the year hail does not strike the harvest, the exorciser gets up to 100 or 200 pounds of wheat from the farmers. If there has been hail he gets nothing or only a scolding because he is no good; indeed, in some regions he must make up part of the damage and is whipped besides.

T 788

joined in a long litany accompanied by hand-clapping and tongue-clicking, that lasted for half an hour. As usual, the guests also took part.

C 132

/199/ During our ride on April 28 there was a downpour that penetrated everything and lasted thirty-six hours in all. All objects were covered with thick, dripping clouds of fog and all mountains higher than 4,200 meters were covered with a thick layer of snow. It was typical monsoon weather. The southeast air currents now began to unload their ballast of water on the high mountains. Now the first green tips of grass on the pastures next to the fields finally began to show.

000

At the pass my new horse gave out and before the day ended two ula horses lay stretched out. The soldiers had been using them from Tschanggu on to transport a few packs belonging to the government. So my private horses had to help out with this government transport.

On another night my soldiers found lodgings for me in the house of the bailiff of Basmi. The Chinese title for gentlemen of this kind is tu be hu. This building, too, had been destroyed, except for the foundation walls, during the last attack of the Tschantui. It was therefore an entirely new house and the rooms were all still very clean. The floor and ceiling were planked and the windows covered with paper. On the walls pictures of holy scenes and imaginary hunts were painted. I had not before seen such a clean and healthy dwelling in the provinces of Kansu and Shensi (Plate XLIV).

T 792

Quite near Basmi there flourished up until a few years ago a monastery called Tsebtschir (rdyibtsen), which had been leveled to

TC 751

During my stay there was an old Chinese physician in Ma tang, who for more than a lifetime had traveled through here each year and who was well-known among young and old. He was a smallpox specialist and on his travels applied the old Chinese method of variolation. In small bamboo tubes he kept human pock lymph with which he "inoculated" or, more accurately, infected, all children up to 12 years that were brought to him, for 300 cash. He put a few drops of his liquid into each child's nose whereupon the children fell ill of smallpox (variola, or, in the native language, dabram) after four or six days and had up to one or two dozen pock efflorescences on their faces or on their chests. He always got his lymph back on his journeys by pricking open individual pustules before they dried up, and gathering the contents. He chose sick persons who had as few eruptions as possible, but beside that he thinned out the lymph with water. The man's opinion was that by means of this dilution he had first of all succeeded in preventing the severe pox among his patients and that they recovered within a week. I was told that throughout Kin tschuan this variolation method is practiced and that if only part of the children in a village are "inoculated" and the rest become infected without having been treated by the specialist, then the ones who were not vaccinated had severe cases of smallpox, a true variola; furthermore, that the variolation caused much severer symptoms among adults than among children under 12.

C 132

My long-drawn-out wait for the messengers of the Li fan yamen was interrupted by several excursions to the nearest mountains, whenever the weather permitted. As a rule it rained many hours every day, if not all day and all through the night. The time of the summer solstice means the rainy season for the entire eastern Tibet, especially for the southern portions. For days the sky is covered with rain clouds; and scraps of fog, the worst enemies of topographers, hang low in the valleys. If I climbed south from my campsite up the Tsche kou (eat-bitterness) Pass and from there to the nearest mountains I reached the flat mountain formation a little beyond 4,250 meters the base, from which rose the row of peaks with their slopes of rock fragments and isolated snow patches. I stood on meadows there which were smoothly sloped, broken with swamps and dotted with rounded knolls (roches moutonnées). But already below 4,000 meters, at 3,700 meters, the valley floors widened and were more trough-shaped than at the market place of Ma tang, which still lies wedged in, causing cold in winter and lack of sun, about which the inhabitants complain bitterly. Beginning with 3,700 meters most of

C 133